

assembly of the fuel system can be reduced and furthermore the number of places where fuel leakage may occur can be decreased.

Scope of claims

1. An internal combustion engine with a fuel joint block, the engine being constructed such that high-pressure fuel fed under pressure from a fuel injection pump is supplied to a fuel injection valve mounted on a cylinder head through a fuel supply path provided inside said cylinder head, wherein an integrated type fuel joint block in which a fuel supply path through which said high-pressure fuel flows and a fuel leak path are arranged is installed detachably on said cylinder head, a fuel path leading from said fuel injection pump is connected to an inlet provided to said fuel joint block for high-pressure fuel entrance, and an high-pressure fuel outlet provided to said fuel joint block is connected directly to said fuel supply path provided inside said cylinder head (cylinder head side fuel path).

2. An internal combustion engine with a fuel joint block according to claim 1, wherein a fuel connector in which is provided said cylinder head side fuel path is inserted into a through-hole provided in a boss provided to the cylinder head and said fuel joint block is installed on said cylinder head such that an end of said fuel connector is brought into close contact with said fuel injection valve for liquid-tight and the other end of

said fuel connector is brought into close contact with said fuel joint block for liquid-tight.

3. An internal combustion engine with a fuel joint block according to claim 2, wherein a fuel leak path is formed between the outer periphery of said fuel connector and the internal surface of said through-hole provided in said cylinder head, and said fuel leak path is connected to said fuel leak path in said fuel joint block.

4. An internal combustion engine with a fuel joint block according to claim 3, wherein a sealing portion where an O-ring is fitted to is provided in a connecting part of said fuel joint block and said cylinder head for sealing said fuel leak path against leakage to the outside.

5. An internal combustion engine with a fuel joint block according to claim 1, wherein a gasket plate is placed between said fuel joint block and said cylinder head at their joining part, and said fuel joint block is fastened to said cylinder head by means of bolts with said gasket plate between them.

6. An internal combustion engine with a fuel joint block according to claim 2, wherein an end of said fuel connector is connected to said fuel injection valve by screw-in connection.

7. An internal combustion engine with a fuel joint block according to claim 2, wherein each of both end sides of an annular ring connector is received in a reception hole provided in said fuel joint block and in a reception hole provided in said cylinder head respectively.

8. A method of assembling a fuel system of an internal combustion engine, the fuel system being constructed such that high-pressure fuel fed under pressure from a fuel injection pump is supplied to a fuel injection valve mounted on a cylinder head through a fuel supply path provided in an internal portion of said cylinder head, comprising the steps of

mounting said fuel injection valve to said cylinder head;

inserting a bar-shaped fuel connector having a fuel path in it into a through-hole provided in a boss provided to said cylinder head; and

fastening an integral type fuel joint block having a fuel supply path through which high-pressure fuel flows and a fuel leak path through which leak fuel flows is fastened to said cylinder head by means of bolts so that each of both ends of said fuel connector is brought into close contact with said fuel injection valve and said fuel joint block respectively for liquid-tight for said fuel supply path.